

November 6, 2002

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Set	Items	Description
S1	21194	PHASE(2N)CONJUGAT?
S2	13722901	PROBE? OR PROBING OR INTERROGAT? OR EXPLOR? OR INVESTIGAT? OR INSPECT? OR PENETRAT? OR PROD?
S3	2625221	BEAM? OR LASER? OR LIGHT(2N)(PULS? OR MODULAT?) OR MASER? - OR QUANTUM(2N)ELECTRONIC? OR OPTICAL(2N)(PUMP? OR GENERAT? OR MODULAT? OR OSCILLATOR?) OR IRASER? OR QUANTUM()GENERATOR?
S4	21968	INTRACAVIT? OR INTRA()CAVIT?
S5	144	S1 AND S2 AND S3 AND S4
S6	165801	S2(3N)S3
S7	1009	S1 AND S6
S8	209	S1(5N)S6
S9	9	S8 AND S4
S10	45	S7 AND S4
S11	28	RD (unique items)

November 5, 2002

11/3,K/1 (Item 1 from file: 8)  
DIALOG(R)File 8:Ei Compendex(R)  
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05730253 E.I. No: EIP00125436748

**Title: Highly efficient phase conjugation in a laser-injection-seeded solid dye laser**

Author: Watanabe, Hirofumi; Omatsu, Takashige; Tateda, Mitsuhiro

Corporate Source: Chiba Univ, Chiba, Jpn

Conference Title: Conference on Lasers and Electro-Optics (CLEO 2000)

Conference Location: San Francisco, CA, USA Conference Date: 20000507-20000512

E.I. Conference No.: 57598

Source: Pacific Rim Conference on Lasers and Electro-Optics, CLEO - Technical Digest 2000. p 160-161

Publication Year: 2000

CODEN: 002223

Language: English

**Title: Highly efficient phase conjugation in a laser-injection-seeded solid dye laser**

Abstract: This article studied an efficient **phase conjugator** by degenerated four wave mixing in laser injection seeded solid dye laser. Dye laser pumped by the same frequency-doubled Q-switched Nd:YAG laser was used as a **probe** and forward-pump **laser** for four wave mixing. For an efficient **phase conjugation**, the **probe beam** passing through the solid dye was retro-reflected by the mirror which enabled the reflected **probe beam** to overlap spatially the **intra - cavity** counter-propagating pump beams. 3 Refs.

Descriptors: Dye lasers; Optical **phase conjugation**; Four wave mixing; Polymethyl methacrylates; Pumping (laser); Q switched lasers; Optical properties

Identifiers: **Intra cavity** counter propagating pump beams; **Phase conjugate** reflectivity; Laser injection seeded solid dye laser; Solid dye laser cavity; **Phase conjugator**

11/3,K/2 (Item 2 from file: 8)  
DIALOG(R)File 8:Ei Compendex(R)  
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05699070 E.I. No: EIP00115396472

**Title: Tunable phase conjugation by degenerate four-wave mixing in a injection-seeded solid dye laser cavity**

Author: Watanabe, Hirofumi; Omatsu, Takashige; Tateda, Mitsuhiro

Corporate Source: Chiba Univ, Chiba, Jpn

Conference Title: 2000 Conference on Lasers and Electro-Optics Europe (CLEO 2000)

Conference Location: Nice, France Conference Date: 20000910-20000915

E.I. Conference No.: 57529

Source: Conference on Lasers and Electro-Optics Europe - Technical Digest 2000. IEEE, Piscataway, NJ, USA, 00TH8505. p 42 CMM3

Publication Year: 2000

CODEN: 85PNA9

Language: English

**Title: Tunable phase conjugation by degenerate four-wave mixing in a injection-seeded solid dye laser cavity**

Abstract: Tunable **phase conjugation** by intracavity degenerate four-wave mixing was demonstrated in an injection-seeded solid dye laser. The maximum efficiency was observed at the four-wave mixing laser wavelength of 564 nm. For efficient **phase conjugation**, the **probe beam** passing through the solid dye were reflected by two mirrors, which enable the reflected **probe beam** to overlap the counter propagating pump

November 5, 2002

beams. 2 Refs.

Descriptors: Dye lasers; Optical **phase conjugation** ; Four wave mixing;  
Laser resonators; Cavity resonators; Optical pumping; Neodymium lasers  
Identifiers: Tunable **phase conjugation** ; Laser cavities; Injection  
seeded solid dye laser cavities

11/3,K/3 (Item 3 from file: 8)

DIALOG(R)File 8: Ei Compendex(R)

(c) 2002 Engineering Info. Inc. All rts. reserv.

05306355 E.I. No: EIP99064701947

Title: **Single-mode Nd:YAG laser with cavity formed by population gratings**

Author: Antipov, Oleg L.; Kuzhelev, Alexander S.; Zinov'ev, Andrey P.;  
Gavrilov, Andrey V.; Fedin, Alexander. V.; Smetanin, Sergey N.; Basiev,  
Tasoltan T.

Corporate Source: Russian Acad of Science, Nizhnii Novgorod, Russia

Conference Title: Proceedings of the 1998 Laser Optics '98: Nonlinear and  
Coherent Optics

Conference Location: St. Petersburg, RUS Conference Date:  
19980622-19980626

E.I. Conference No.: 55146

Source: Proceedings of SPIE - The International Society for Optical  
Engineering v 3684 1999. p 59-63

Publication Year: 1999

CODEN: PSISDG ISSN: 0277-786X

Language: English

...Abstract: periodic Nd:YAG laser with dynamic cavity formed with  
participation of dynamics holographic gratings in **laser** elements have  
been **investigated**. A Sagnac interferometer was applied as a laser cavity  
mirror for angular selection of initial...

...passive Q-switch, we used saturable absorber crystal LiF:F//2\*\* minus ,  
which increased total **intracavity** diffraction efficiency of dynamic  
gratings completing the cavity. Self-pumped **phase conjugation** in Nd:YAG  
amplifier and LiF:F//2\*\* minus absorber provided adaptive properties of the  
...

...Descriptors: Q switched lasers; Laser pulses; Diffraction gratings;  
Holography; Interferometers; Mirrors; Light absorption; Optical pumping;  
Optical **phase conjugation**

11/3,K/4 (Item 4 from file: 8)

DIALOG(R)File 8: Ei Compendex(R)

(c) 2002 Engineering Info. Inc. All rts. reserv.

04861345 E.I. No: EIP97063696736

Title: **High-frequency temporal structure of laser and phase - conjugated  
signals at intracavity degenerate four-wave mixing of CO2 and CO laser  
radiation in their inverted medium**

Author: Beairsto, Chris T.; Ionin, Andrei A.; Kotkov, A.A.; Penny, R.;  
Seleznev, L.; Squires, Stephen M.; Walter, Robert F.

Corporate Source: U.S. Army Applied Technology Directorate, White Sands  
Mis Rge, NM, USA

Conference Title: Gas and Chemical Lasers and Applications II

Conference Location: San Jose, CA, USA Conference Date: 19970210

E.I. Conference No.: 22883

Source: Proceedings of SPIE - The International Society for Optical  
Engineering v 2987 1997.. p 166-173

Publication Year: 1997

CODEN: PSISDG ISSN: 0277-786X ISBN: 0-8194-2398-X

Language: English

Title: **High-frequency temporal structure of laser and phase - conjugated  
signals at intracavity degenerate four-wave mixing of CO2 and CO laser**

November 5, 2002

**radiation in their inverted medium**

Abstract: The high frequency temporal structure of probe and **phase conjugation** (PC) signals under degenerate four-wave mixing (DFWM) of long pulse carbon-dioxide and carbon...

...time history of PC signal has a complicated behavior and structure differed from that of **probe laser** signal on large (greater than or equal to 100 ns) and small (approximately 10 - 100...

Descriptors: Carbon dioxide lasers; Carbon monoxide; Four wave mixing; Optical **phase conjugation** ; Electron beams; Electric discharges; Diffraction gratings; Laser pulses

Identifiers: **Intracavity** degenerate mixing

11/3,K/5 (Item 5 from file: 8)

DIALOG(R)File 8: Ei Compendex(R)

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03665863 E.I. No: EIP93071024943

**Title: Generation of phase conjugate wave from a visible InGaAlP laser**

Corporate Source: Tokyo Inst of Technology, Yokohama, Jpn

Source: Japanese Journal of Applied Physics, Part 1: Regular Papers & Short Notes & Review Papers v 32 n 3A Mar 1993. p 1107-1111

Publication Year: 1993

CODEN: JAPNDE ISSN: 0021-4922

Language: English

**Title: Generation of phase conjugate wave from a visible InGaAlP laser**

Abstract: This paper presents the first quantitatively measured results of detuning and spatial characteristics of the **phase conjugate** wave which is emitted from a Fabry-Perot cavity-type InGaAlP laser. Bandwidth of a...

...to be due to the relaxation oscillation frequency of the laser. The reflectivity of the **phase conjugate** mirror and the amplification gain were larger than 10 and 100, respectively. By the off-axial injection of the **probe beam** to a broad stripe laser, the emitted **phase conjugate** wave was separated spatially from the pump beam. Non-degenerate four-wave mixing characteristics of...

...1 THz, which was determined by the reciprocal of the half-cycle time of the **intracavity** light-wave. (Author abstract) 10 Refs.

Descriptors: Optical **phase conjugation** ; Optical waveguides; Semiconductor lasers; Semiconducting indium compounds; Semiconducting aluminum compounds; Fabry-Perot interferometers; Cavity resonators...

Identifiers: **Phase conjugate** waves; Fabry Perot cavity type semiconductor lasers; Semiconducting indium gallium aluminum phosphide; Semiconducting aluminum gallium...

11/3,K/6 (Item 6 from file: 8)

DIALOG(R)File 8: Ei Compendex(R)

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01068871 E.I. Monthly No: EI8108066224 E.I. Yearly No: EI81049842

**Title: BISTABILITY AND HYSTERESIS IN PHASE - CONJUGATED REFLECTIVITY.**

Author: Agrawal, G. P.; Flytzanis, C.

Corporate Source: Quantel, Orsay, Fr

Source: IEEE Journal of Quantum Electronics v QE-17 n 3 Mar 1981 p 374-380

Publication Year: 1981

CODEN: IEJQA7 ISSN: 0018-9197

Language: ENGLISH

November 5, 2002

**Title: BISTABILITY AND HYSTERESIS IN PHASE - CONJUGATED REFLECTIVITY.**

...Abstract: characteristics is probed through a weak optical field. The nonlinear interaction among the counterpropagating pump beams and the probe beam generates the phase - conjugated beam through intracavity degenerate four-wave mixing. It is shown that the phase - conjugated reflectivity displays bistability and that hysteresis as the driving field is varied in a continuous...

11/3,K/7 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

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6630743 INSPEC Abstract Number: A2000-15-4255H-002, B2000-08-4320C-009

**Title: Intracavity phase conjugation of the radiation from a pulsed frequency-selective CO laser**

Author(s): Ionin, A.A.; Kotkov, A.A.; Kurnosov, A.K.; Napartovich, A.; Seleznev, L.

Author Affiliation: P.N. Lebedev Phys. Inst., Acad. of Sci., Moscow, Russia

Journal: Kvantovaya Elektronika, Moskva vol.30, no.4 p.342-8

Publisher: Turpion Ltd.; Kvantovaya Elektronika,

Publication Date: April 2000 Country of Publication: Russia

CODEN: KVEKA3 ISSN: 0368-7147

SICI: 0368-7147(200004)30:4L.342;1-0

Material Identity Number: C314-2000-007

Translated in: Quantum Electronics vol.30, no.4 p.342-8

Publication Date: April 2000 Country of Publication: UK

CODEN: QUELEZ ISSN: 1063-7818

SICI of Translation: 1063-7818(200004)30:4L.342:IPCR;1-4

Language: English

Subfile: A B

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**Title: Intracavity phase conjugation of the radiation from a pulsed frequency-selective CO laser**

Abstract: The temporal dynamics and efficiency of phase - conjugate reflection in the course of intracavity degenerate four-wave mixing of radiation from a pulsed frequency selective electron-beam-sustained CO laser was investigated experimentally and theoretically. The energy efficiency of the phase - conjugate reflection in the experiments reached 1.5-2.5% for a CO laser emitting as...

... Comparison of the experimental and calculated data indicates the dominant role of the resonance amplitude phase - conjugation mechanism in the active medium of a CO laser.

...Descriptors: optical phase conjugation ;

Identifiers: intracavity phase conjugation ; ...

... phase - conjugate reflection...

... intracavity degenerate four-wave mixing...

...resonance amplitude phase - conjugation mechanism

11/3,K/8 (Item 2 from file: 2)

DIALOG(R)File 2:INSPEC

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6301263 INSPEC Abstract Number: A1999-17-4260F-002, B1999-09-4330B-002

**Title: Passive Q-switching of a self-pumped phase - conjugate Nd:YAG loop resonator**

Author(s): Fedin, A.V.; Gavrilov, A.V.; Basiev, T.T.; Antipov, O.L.; Kuzhelev, A.S.; Smetanin, S.N.

November 5, 2002

Author Affiliation: Kovrov State Technol. Acad., Vladimir, Russia  
Journal: Laser Physics vol.9, no.2 p.433-6  
Publisher: MAIK Nauka/Interperiodica Publishing,  
Publication Date: March-April 1999 Country of Publication: Russia  
CODEN: LAPHEJ ISSN: 1054-660X  
SICI: 1054-660X(199903/04)9:2L.433:PSSP;1-0  
Material Identity Number: C437-1999-003  
Language: English  
Subfile: A B  
Copyright 1999, IEE

**Title: Passive Q-switching of a self-pumped phase - conjugate Nd:YAG loop resonator**

Abstract: Q-switched regimes of a nanosecond pulse-periodic Nd:YAG laser with a self-pumped **phase - conjugate** loop cavity are investigated. A Sagnac interferometer as the laser cavity rare mirror is applied...  
... of initial laser radiation. Two flashlamp-pumped Nd:YAG rods placed at the intersection of **laser beams produce** both gain and **laser** output coupling. As a passive Q-switch, a LiF:F/sub 2//sup -/ crystal is used, which also increases diffraction efficiency of **intracavity phase conjugation** . Two schemes with different LiF:F/sub 2//sup -/ crystal positions inside the cavity are...

...Descriptors: optical **phase conjugation** ;

...Identifiers: self-pumped **phase - conjugate** Nd:YAG loop resonator...

...self-pumped **phase - conjugate** loop cavity...

... **intracavity phase conjugation** ;

11/3,K/9 (Item 3 from file: 2)

DIALOG(R)File 2:INSPEC

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5891677 INSPEC Abstract Number: A9810-4260D-007, B9805-4320L-012

**Title: Self-consistent spatial mode analysis of self-adaptive laser oscillators**

Author(s): Udaiyan, D.; Crofts, G.J.; Omatsu, T.; Damzen, M.J.

Author Affiliation: Blackett Lab., Imperial Coll. of Sci., Technol. & Med., London, UK

Journal: Journal of the Optical Society of America B (Optical Physics)  
vol.15, no.4 p.1346-52

Publisher: Opt. Soc. America,

Publication Date: April 1998 Country of Publication: USA

CODEN: JOBPDE ISSN: 0740-3224

SICI: 0740-3224(199804)15:4L.1346:SCSM;1-B

Material Identity Number: G704-98004

U.S. Copyright Clearance Center Code: 0740-3224/98/041346-7\$10.00

Language: English

Subfile: A B

Copyright 1998, IEE

...Abstract: matrices is used to find the self-consistent fundamental spatial mode solutions of self-adaptive **laser** resonators. The resonators **investigated** consist of a nonlinear medium in a self-intersecting loop geometry together with a feedback output coupler mirror and additional **intracavity** elements. A simplified system without **intracavity** elements is analyzed initially, and an analytic expression for the mode solution is deduced. Addition of an **intracavity** lens is shown to permit enhancement of the quality of the **phase - conjugation** process as well as control of the mode size. The theoretical analysis is extended to...

...Descriptors: optical **phase conjugation** ;

...Identifiers: **intracavity** elements...

... **intracavity** lens...

November 5, 2002

... phase - conjugation process

11/3,K/10 (Item 4 from file: 2)

DIALOG(R)File 2:INSPEC

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5762550 INSPEC Abstract Number: A9801-4265M-011, B9801-4340-041

**Title: High frequency temporal structure of laser and phase conjugated signals at intracavity degenerate four-wave mixing of CO/sub 2/ and CO laser radiation inside their inverted medium**

Author(s): Beairsto, C.; Ionin, A.; Kotkov, A.; Penny, R.; Seleznev, L.; Squires, S.; Walter, R.

Author Affiliation: Dept. of Appl. Technol., White Sands Missile Range, NM, USA

Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA)

vol.3092 p.337-40

Publisher: SPIE-Int. Soc. Opt. Eng,

Publication Date: 1997 Country of Publication: USA

CODEN: PSISDG ISSN: 0277-786X

SICI: 0277-786X(1997)3092L:337:HFTS;1-6

Material Identity Number: C574-97194

U.S. Copyright Clearance Center Code: 0277-786X/97/\$10.00

Conference Title: XI International Symposium on Gas Flow and Chemical Lasers and High-Power Laser Conference

Conference Sponsor: SPIE; Eng. & Phys. Res. Council; Eur. Office of Aerospace Res. & Dev.; Int. Sci. Found.; Lothian & Edinburgh Enterprise; et al

Conference Date: 25-30 Aug. 1996 Conference Location: Edinburgh, UK

Language: English

Subfile: A B

Copyright 1997, IEE

**Title: High frequency temporal structure of laser and phase conjugated signals at intracavity degenerate four-wave mixing of CO/sub 2/ and CO laser radiation inside their inverted...**

Abstract: The high frequency temporal structure of **probe ( laser )** and **phase conjugation (PC)** signal under **intracavity** degenerate four-wave mixing (DFWM) of long pulse CO/sub 2/ and CO laser radiation...

...Descriptors: optical **phase conjugation**

...Identifiers: **phase conjugated** signals...

... intracavity degenerate four-wave mixing...

... probe laser ; ...

... phase conjugation signal

11/3,K/11 (Item 5 from file: 2)

DIALOG(R)File 2:INSPEC

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5692544 INSPEC Abstract Number: A9720-4260F-006, B9710-4330-016

**Title: High-frequency temporal structure of laser and phase - conjugated signals in intracavity degenerate four-wave mixing of radiation from electron-beam-controlled discharge CO/sub 2/ and CO lasers in their active media**

Author(s): Beairsto, C.; Walter, R.; Ionin, A.A.; Kotkov, A.A.; Penny, R.; Seleznev, L.A.; Squires, S.

Author Affiliation: US Army Directorate of Appl. Technol., White Sands, NM, USA

Journal: Kvantovaya Elektronika, Moskva vol.24, no.7 p.631-7

November 5, 2002

Publisher: Turpion Ltd.; Kvantovaya Elektronika,  
Publication Date: July 1997 Country of Publication: Russia  
CODEN: KVEKA3 ISSN: 0368-7147  
SICI: 0368-7147(199707)24:7L.631;1-C  
Material Identity Number: C314-97008  
Translated in: Quantum Electronics vol.27, no.7 p.614-20  
Publication Date: July 1997 Country of Publication: UK  
CODEN: QUELEZ ISSN: 1063-7818  
SICI of Translation: 1063-7818(199707)27:7L.614:HFTS;1-T  
Language: English  
Subfile: A B  
Copyright 1997, IEE

**Title: High-frequency temporal structure of laser and phase - conjugated signals in intracavity degenerate four-wave mixing of radiation from electron-beam-controlled discharge CO/sub 2/ and...**

**Abstract:** The high-frequency temporal structure of **probe laser and phase - conjugated** signals, generated in the course of degenerate four-wave mixing of long pulses from CO...

...plasma mirror) of tau /sub 0.1/~10 ns duration. The temporal dynamics of the **phase - conjugated** signal also had a complex structure, differing from the probe signal structure over longer (in...

...and small-scale diffraction gratings, and of the temporal synchronism on the dynamics of the **phase - conjugated** signal were considered.

...Descriptors: optical **phase conjugation**

...Identifiers: **phase - conjugated** signals...

... **intracavity** degenerate four-wave mixing

11/3,K/12 (Item 6 from file: 2)

DIALOG(R)File 2:INSPEC

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5191026 INSPEC Abstract Number: A9606-4260B-008, B9604-4320G-005

**Title: Intracavity adaptive optics for a powerful Nd:YAG laser**

Author(s): Chetkin, S.A.; Vdovin, G.V.; Ueda, K.-I.

Author Affiliation: Inst. of Gen. Phys., Acad. of Sci., Moscow, Russia

Journal: Laser Physics vol.5, no.6 p.1189-98

Publisher: MAIK Nauka/Interperiodica Publishing,

Publication Date: Nov.-Dec. 1995 Country of Publication: Russia

CODEN: LAPHEJ ISSN: 1054-660X

SICI: 1054-660X(199511/12)5:6L.1189:IAOP;1-8

Material Identity Number: C437-96001

Language: English

Subfile: A B

Copyright 1996, IEE

**Title: Intracavity adaptive optics for a powerful Nd:YAG laser**

...Abstract: important factor that limits both stability widths of a source and constancy of the related **beam** parameter **product**. Due to its radial temperature profile, the laser rod acts as a thick lens whose...

... relatively insensitive to variations of the dioptric power. Unfortunately, such resonators have some restrictions. The **intracavity** active-optic technology is able to continue process in the development of high-power solid...

... continuous adjustments of the resonator configuration with corrective optical elements. There are two ways that **intracavity** adaptive-optic technology can compensate for the harmful influence of a thermal lens (TL) on...



November 5, 2002

... quality. The first one corresponds to the TL fluence compensation by means of implementing a **phase - conjugation** control. This technology has been used with a solid-state laser plane-parallel resonator. It...

...Descriptors: optical **phase conjugation** ;  
Identifiers: **intracavity** adaptive optics...

...related **beam** parameter **product** ; ...

... **intracavity** active-optic technology...

... **phase - conjugation** control

11/3,K/13 (Item 7 from file: 2)

DIALOG(R)File 2:INSPEC

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4755611 INSPEC Abstract Number: A9420-4265F-004, B9410-4340-082

**Title: Active medium of molecular CO/sub 2/ and CO lasers as a nonlinear component of a phase - conjugating mirror**

Author(s): Afanas'ev, L.A.; Ionin, A.A.; Kiselev, E.A.; Klimachev, Yu.M.; Kotkov, A.A.; Sinit syn, D.V.

Author Affiliation: P.N. Lebedev Phys. Inst., Acad. of Sci., Moscow, Russia

Journal: Kvantovaya Elektronika, Moskva vol.24, no.6 p.557-60

Publication Date: June 1994 Country of Publication: Russia

CODEN: KVEKA3 ISSN: 0368-7147

Translated in: Quantum Electronics vol.24, no.6 p.513-16

Publication Date: June 1994 Country of Publication: UK

CODEN: QUELEZ ISSN: 1063-7818

Language: English

Subfile: A B

...Title: **medium of molecular CO/sub 2/ and CO lasers as a nonlinear component of a phase - conjugating mirror**

...Abstract: 3/  $\mu$ s pulses emitted by electron-beam-controlled-discharge CO/sub 2/ and CO lasers. Linearly polarised **probe** radiation from a CO/sub 2/ (CO) laser was directed into the **intracavity** inverted medium of the laser itself. The radiation reflected back by the active medium was recorded in the near-field and far-field zones. **Phase conjugation** was confirmed by reconstruction of the spatial pattern of the radiation field in the near...

... the angular divergence of the radiation in the far-field zone. The energy coefficient representing **phase conjugation** by reflection reached 2% for the CO/sub 2/ laser and 0.2% for the CO laser. The time dependence of the **phase - conjugation** power coefficient was analysed.

...Descriptors: optical **phase conjugation**

Identifiers: **intracavity** inverted medium...

... **phase - conjugating** mirror...

... **phase - conjugation** power coefficient

11/3,K/14 (Item 8 from file: 2)

DIALOG(R)File 2:INSPEC

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4413641 INSPEC Abstract Number: A9313-4265F-007, B9307-4320J-017

**Title: Generation of phase conjugate wave from a visible InGaAlP laser**

Author(s): Awaji, Y.; Sayama, S.; Suzuki, H.; Ohtsu, M.; Teramachi, Y.

Author Affiliation: Interdisciplinary Graduate Sch. of Sci. & Eng., Tokyo Inst. of Technol., Yokohama, Japan

Journal: Japanese Journal of Applied Physics, Part 1 (Regular Papers &

November 5, 2002

Short Notes) vol.32, no.3A p.1107-11  
Publication Date: March 1993 Country of Publication: Japan  
CODEN: JAPNDE ISSN: 0021-4922  
Language: English  
Subfile: A B

**Title: Generation of phase conjugate wave from a visible InGaAlP laser**

**Abstract:** This paper presents the first quantitatively measured results of detuning and spatial characteristics of the **phase conjugate** wave which is emitted from a Fabry-Perot cavity-type InGaAlP laser. Bandwidth of a...

... to be due to the relaxation oscillation frequency of the laser. The reflectivity of the **phase conjugate** mirror and the amplification gain were larger than 10 and 100, respectively. By the off-axial injection of the **probe beam** to a broad stripe laser, the emitted **phase conjugate** wave was separated spatially from the pump beam. Non-degenerate four-wave mixing characteristics of...

... 1 THz, which was determined by the reciprocal of the half-cycle time of the **intracavity** light-wave.

...Descriptors: optical **phase conjugation** ;

...Identifiers: **phase conjugate** wave...

... **phase conjugate** mirror

11/3,K/15 (Item 9 from file: 2)  
DIALOG(R)File 2:INSPEC  
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04247080 INSPEC Abstract Number: A9221-4255B-004

**Title: Instability and chaos in a CO/sub 2/-like laser with intracavity parametric amplification**

Author(s): Dutta Gupta, S.; Pande, M.B.

Author Affiliation: Sch. of Phys., Hyderabad Univ., India

Journal: Journal of Modern Optics vol.39, no.8 p.1643-50

Publication Date: Aug. 1992 Country of Publication: UK

CODEN: JMOPEW ISSN: 0950-0340

U.S. Copyright Clearance Center Code: 0950-0340/92/\$3.00

Language: English

Subfile: A

**Title: Instability and chaos in a CO/sub 2/-like laser with intracavity parametric amplification**

...Abstract: sub 2/-like laser system due to the presence of a parametric amplifier in the **laser** cavity are **investigated**. The equations of motion for the electric field and the population inversion are studied and...

... similar behaviour is observed in the Lorenz model with a parametric amplifier or with a **phase conjugate** mirror.

...Identifiers: **intracavity** parametric amplification...

... **phase conjugate** mirror

11/3,K/16 (Item 10 from file: 2)  
DIALOG(R)File 2:INSPEC  
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03710527 INSPEC Abstract Number: A90124155

**Title: Chaos in photorefractive four-wave mixing with a single grating and a single interaction region**

Author(s): Krolikowski, W.; Belic, M.R.; Cronin-Golomb, M.; Bledowski, A.

Author Affiliation: Electroopt. Technol. Center, Tufts Univ., Medford, MA, USA

November 5, 2002

Journal: Journal of the Optical Society of America B (Optical Physics)  
vol.7, no.7 p.1204-9  
Publication Date: July 1990 Country of Publication: USA  
CODEN: JOBPDE ISSN: 0740-3224  
U.S. Copyright Clearance Center Code: 0740-3224/90/071204-06\$02.00  
Language: English  
Subfile: A

...Abstract: chaos. In this model there is a single (transmission) grating and no external or internal ( **intracavity** ) feedback. The intensity of the **phase - conjugate** wave is found to exhibit a period-doubling route to chaos on variation of the intensity of the **probe beam** and the linear absorption coefficient. The crucial elements in obtaining chaotic behavior are operation above...

... of an external electric field, which causes a shift in the optical frequency of the **phase - conjugate** wave.

...Descriptors: optical **phase conjugation** ;

...Identifiers: **phase - conjugate** wave...

... **probe beam** ;

11/3,K/17 (Item 11 from file: 2)  
DIALOG(R)File 2:INSPEC  
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03251832 INSPEC Abstract Number: A88139017

Title: **Theory of intracavity -pumped photorefractive phase - conjugate mirror**

Author(s): Yahalom, R.; Yariv, A.

Author Affiliation: Thomas J. Watson, Jr. Lab. of Appl. Phys., California Inst. of Technol., Pasadena, CA, USA

Journal: Journal of the Optical Society of America B (Optical Physics)  
vol.5, no.8 p.1783-7

Publication Date: Aug. 1988 Country of Publication: USA

CODEN: JOBPDE ISSN: 0740-3224

U.S. Copyright Clearance Center Code: 0740-3224/88/081783-05\$02.00

Language: English

Subfile: A

Title: **Theory of intracavity -pumped photorefractive phase - conjugate mirror**

Abstract: The authors present a new type of **phase - conjugate** mirror that is based on an externally driven Fabry-Perot interferometer with **intracavity** -pumped photorefractive material, which is **probed** by the signal **beam**. It is shown theoretically that such a configuration leads to multivalued solutions and possibly to...

... This configuration also permits optical control of the resonator output and electrical control of the **phase - conjugate** reflectivity.

...Descriptors: optical **phase conjugation** ;

Identifiers: **intracavity** -pumped photorefractive **phase - conjugate mirror**...

... **intracavity** -pumped photorefractive material...

... **phase - conjugate** reflectivity

11/3,K/18 (Item 12 from file: 2)  
DIALOG(R)File 2:INSPEC  
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02936964 INSPEC Abstract Number: A87090723, B87046983, C87047118

Title: **Optical logic functions using nearly degenerate four-wave mixing in laser diodes**

November 5, 2002

Author(s): Thedrez, B.; Nakajima, H.; Frey, R.  
Author Affiliation: Groupe Opt. des Materiaux, Ecole Nat. Supérieure des  
Telecommun., Paris, France  
Journal: Proceedings of the SPIE - The International Society for Optical  
Engineering vol.700 p.259-64  
Publication Date: 1986 Country of Publication: USA  
CODEN: PSISDG ISSN: 0277-786X  
Conference Title: 1986 International Optical Computing Conference  
Conference Sponsor: SPIE; OSA; IEEE; Int. Comm. Opt  
Conference Date: 6-11 July 1986 Conference Location: Jerusalem, Israel  
Language: English  
Subfile: A B C

...Abstract: of an external pump signal. The conjugate frequency  $\omega + \delta$  is then obtained in **intracavity** nearly-degenerate four-wave mixing when a **probe beam** of frequency  $\omega - \delta$  is injected through the laser diode colinearly with the pump...

...Descriptors: optical **phase conjugation** ;

11/3,K/19 (Item 13 from file: 2)  
DIALOG(R)File 2:INSPEC  
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02886252 INSPEC Abstract Number: A87062789, B87033328

**Title: Bistability in intracavity resonant degenerate 4-wave mixing in Na vapor**

Author(s): Lange, W.; Koster, E.; Mlynek, J.  
Author Affiliation: Inst. für Quantenopt., Hannover Univ., West Germany  
Conference Title: Optical Bistability III. Proceedings of the Topical Meeting p.252-5  
Editor(s): Gibbs, H.M.; Mandel, P.; Peyghambarian, N.; Smith, S.D.  
Publisher: Springer-Verlag, Berlin, West Germany  
Publication Date: 1986 Country of Publication: West Germany xiv+364 pp.  
ISBN: 3 540 16512 6  
Conference Date: 2-4 Dec. 1985 Conference Location: Tucson, AZ, USA  
Language: English  
Subfile: A B

**Title: Bistability in intracavity resonant degenerate 4-wave mixing in Na vapor**

Abstract: Reports on more detailed studies of **intracavity phase conjugation** through resonant DFWM; the nonlinear medium consisted of sodium atoms in a buffer gas (typically 170 hPa of argon). In the **investigations** reported, the dye **laser** acting as a light source was tuned to the D/sub 1/-line with accuracy...

...Descriptors: optical **phase conjugation** ;

...Identifiers: **intracavity** resonant degenerate four wave mixing...

... **intracavity phase conjugation** ;

11/3,K/20 (Item 14 from file: 2)  
DIALOG(R)File 2:INSPEC  
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02587542 INSPEC Abstract Number: A86014949, B86009826

**Title: Intracavity nearly degenerate four-wave mixing in a (GaAl)As semiconductor laser**

Author(s): Nakajima, H.; Frey, R.  
Author Affiliation: Ecole Nat. Supérieure des Telecommun., Paris, France

Journal: Applied Physics Letters vol.47, no.8 p.769-71  
Publication Date: 15 Oct. 1985 Country of Publication: USA

November 5, 2002

CODEN: APPLAB ISSN: 0003-6951  
U.S. Copyright Clearance Center Code: 0003-6951/85/200769-03\$01.00  
Language: English  
Subfile: A B

**Title:** Intracavity nearly degenerate four-wave mixing in a (GaAl)As semiconductor laser

**Abstract:** Intracavity nearly degenerate four-wave mixing has been demonstrated by injecting a low intensity probe beam of frequency  $\omega$  -  $\delta$   $\omega$  inside a (GaAl)As semiconductor laser operating above threshold at...

...Descriptors: optical phase conjugation ;  
...Identifiers: intracavity ;

11/3,K/21 (Item 15 from file: 2)  
DIALOG(R)File 2:INSPEC  
(c) 2002 Institution of Electrical Engineers. All rts. reserv.

01558765 INSPEC Abstract Number: A80078894, B80040497  
**Title:** Intracavity techniques for high reflectivity phase conjugation at 10  $\mu$  m in germanium and inverted CO/sub 2/  
**Author(s):** Feldman, B.J.; Fisher, R.A.; Bergmann, E.E.; Tercovich, R.G.; Sena, F.C.; Bigio, I.J.  
**Author Affiliation:** Los Alamos Sci. Lab., Univ. of California, Los Alamos, NM, USA  
**Journal:** Proceedings of the Society of Photo-Optical Instrumentation Engineers vol.190 p.412  
**Publication Date:** 1979 **Country of Publication:** USA  
**CODEN:** SPIECJ **ISSN:** 0361-0748  
**Conference Title:** Proceedings of the Los Alamos Conference on Optics '79  
**Conference Sponsor:** Los Alamos Sci. Lab  
**Conference Date:** 23-25 May 1979 **Conference Location:** Los Alamos, NM, USA  
**Language:** English  
**Subfile:** A B

**Title:** Intracavity techniques for high reflectivity phase conjugation at 10  $\mu$  m in germanium and inverted CO/sub 2/  
**Abstract:** Summary form only given. The authors have generated phase - conjugate 10  $\mu$  m reflection from the grating established with counter propagated waves in both Ge...

... an added bonus, when working with the nonlinearity of a partially saturated gain medium, the probe beam is amplified through 'unused' gain volume on its way to the interaction region, giving rise...

...Descriptors: optical phase conjugation ;  
Identifiers: high reflectivity phase conjugation ; ...

... intracavity techniques

11/3,K/22 (Item 1 from file: 6)  
DIALOG(R)File 6:NTIS  
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1478881 NTIS Accession Number: AD-A214 643/9  
**Nonlinear Optics Technology. Phase 2. Area 1. Four Wave Mixing Technology. Area 2. Phase Conjugated Solid State Laser Technology**  
(Final rept. Sep 86-Jan 88)  
Brock, J. ; Caponi, M. ; Frantz, L. ; Harpole, G. ; Hoefer, C.  
TRW Space and Technology Group, Redondo Beach, CA.  
Corp. Source Codes: 077450000; 412875  
15 Jan 88 266p  
**Languages:** English

November 5, 2002

Journal Announcement: GRAI9006

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NTIS Prices: PC A12/MF A02

**Nonlinear Optics Technology. Phase 2. Area 1. Four Wave Mixing Technology. Area 2. Phase Conjugated Solid State Laser Technology**

Four wave mixing (FWM) **phase conjugation** was investigated in materials that can operate at diode **laser** wavelengths. **Investigated** were atomic cesium vapor, bulk GaAs, multiquantum well (MQW) GaAs/AlGaAs, and **intracavity** FWM in diode laser waveguides operating above threshold. Conjugate reflectivities up to 154% were observed...

... the 852 nm hyperfine transitions. Self focusing and angular response were also investigated. Backward FWM **phase conjugation** at room temperature was demonstrated in bulk GaAs and MQW GaAs/AlGaAs for the first ...

... to determine minimum input conditions. A ring oscillator, conjugated power amplifier was constructed and tested. **Phase conjugated** doubling to **produce** high **beam** quality of the second harmonic when there are aberrations in the doubling medium was demonstrated...

Identifiers: Four Wave Mixing; \*Nonlinear Optics; **Phase Conjugation** ; Quantum Wells; MQW(Multiquantum Wells); NTISDODXA

11/3,K/23 (Item 1 from file: 144)

DIALOG(R)File 144:Pascal

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15125915 PASCAL No.: 01-0288380

**250-W average-power Nd : YAG laser with self-adaptive cavity completed by dynamic refractive-index gratings**

ANTIPOV Oleg L; CHAUSOV Dmitry V; KUZHELEV Alexander S; VOROB'EV Vladimir A; ZINOVIEV Andrey P

Institute of Applied Physics of the Russian Academy of Science, Nizhny Novgorod, Russia

Journal: IEEE journal of quantum electronics, 2001, 37 (5) 716-724

Language: English

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... refractive index gratings which accompany population gratings induced in Nd: YAG laser crystals by generating **beams** themselves is **investigated** numerically and experimentally. The role of different noise sources at the initial stage of nonlinear cavity formation is studied. The adaptation of the cavity formed by nonlinear dynamic mirrors to **intracavity** distortions is demonstrated. The generation of beams with average power up to 250 W, near...

...English Descriptors: Theoretical study; Numerical method; Experimental study; Laser cavity resonators; Holographic gratings; Dynamic hologram; Nonlinear optics; **Phase conjugation** ; High-power lasers; Neodymium lasers; YAG laser

11/3,K/24 (Item 2 from file: 144)

DIALOG(R)File 144:Pascal

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14745654 PASCAL No.: 00-0423192

**Intracavity phase conjugation of the radiation from a pulsed frequency-selective CO laser**

November 5, 2002

LONIN A A; KOTKOV A A; KURNOSOV A K; NAPARTOVICH A P; SELEZNEV L V  
P N Lebedev Physics Institute, Russian Academy of Sciences, Leninskii  
prospekt 53, 117924 Moscow, Russia; Troitsk Institute of Innovative and  
Fusion Research (State Scientific Centre of the Russian Federation), 142092  
Troitsk, Moscow province, Russia  
Journal: Quantum electronics : (Woodbury), 2000, 30 (4) 342-348  
Language: English

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**Intracavity phase conjugation of the radiation from a pulsed  
frequency-selective CO laser**

The temporal dynamics and efficiency of **phase - conjugate** reflection in  
the course of **intracavity** degenerate four-wave mixing of radiation from a  
pulsed frequency-selective electron-beam-sustained CO **laser** was  
**investigated** experimentally and theoretically. The energy efficiency of  
the **phase - conjugate** reflection in the experiments reached 1.5-2.5% for  
a CO laser emitting as...

... Comparison of the experimental and calculated data indicates the  
dominant role of the resonance amplitude **phase - conjugation** mechanism in  
the active medium of a CO laser.

...English Descriptors: Theoretical study; Gas lasers; Carbon monoxide  
lasers; Electron beam pumping; Nonlinear optics; Four-wave mixing;  
**Intracavity ; Phase conjugation**

...French Descriptors: Etude theorique; Laser gaz; Laser CO; Pompage  
faisceau electronique; Optique non lineaire; Melange 4 ondes;  
**Intracavite ; Conjugaison phase; Melange 4 ondes degenerate; 4265H; 4255L**

11/3,K/25 (Item 1 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci  
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03153373 Genuine Article#: NK974 No. References: 89

**Title: TERAWATT TO PETAWATT SUBPICOSECOND LASERS**

Author(s): PERRY MD; MOUROU G

Corporate Source: LAWRENCE LIVERMORE NATL LAB,LASER PROGRAM,POB  
808,L-493/LIVERMORE//CA/94551; UNIV MICHIGAN,CTR ULTRAFAST SCI/ANN  
ARBOR//MI/48109

Journal: SCIENCE, 1994, V264, N5161 (MAY 13), P917-924

ISSN: 0036-8075

Language: ENGLISH Document Type: ARTICLE (Abstract Available)

...Abstract: the development of small-scale terawatt and now even petawatt  
(1000-terawatt) laser systems. The **laser** technology used to **produce**  
these intense pulses and examples of new phenomena resulting from the  
application of these systems...

...Research Fronts: PUMPED ND-GLASS REGENERATIVE AMPLIFIER)

92-0122 001 (DEGENERATE 4-WAVE-MIXING; STIMULATED BRILLOUIN-SCATTERING  
**PHASE CONJUGATION ; OH RADICAL DISTRIBUTION)**

92-4856 001 (FEMTOSECOND PASSIVELY MODE-LOCKED TI-SAPPHIRE LASER;  
ULTRASHORT PULSE GENERATION; 3RD-ORDER **INTRACAVITY** DISPERSION)

92-8172 001 (ULTRASHORT PULSE GENERATION; NONLINEAR DISPERSIVE FIBERS;  
QUANTUM-WELL GAAS/ALGAAS WAVE...

11/3,K/26 (Item 2 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci  
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02728102 Genuine Article#: LZ008 No. References: 26

**Title: NEARLY DEGENERATE 4-WAVE-MIXING IN DISTRIBUTED-FEEDBACK  
SEMICONDUCTOR-LASERS OPERATING ABOVE-THRESHOLD**

November 5, 2002

Author(s): MECOZZI A; DOTTAVI A; HUI RQ  
Corporate Source: FDN UGO BORDONI/I-00142 ROME//ITALY/  
Journal: IEEE JOURNAL OF QUANTUM ELECTRONICS, 1993, V29, N6 (JUN), P  
1477-1487  
ISSN: 0018-9197  
Language: ENGLISH Document Type: ARTICLE (Abstract Available)

Abstract: Nearly degenerate four-wave mixing in distributed feedback semiconductor **lasers** above threshold is **investigated** theoretically and experimentally. The experimental results reveal an almost symmetric amplification of probe and conjugate...

...Identifiers--GAIN SATURATION; NONLINEAR GAIN; DIODE-LASERS; AMPLIFIERS; WAVE; **INTRACAVITY**; BANDWIDTH; DYNAMICS; LOCKING

...Research Fronts: OF MODE HOPPING NOISE)

91-0797 001 (PHOTOREFRACTIVE BATIO3 CRYSTAL; COUPLING EFFICIENCY FOR THE DOUBLE **PHASE - CONJUGATE** MIRROR; EFFECT OF SHALLOW TRAPS)

91-2825 001 (NONLINEAR OPTICAL MEDIA; LIGHT WAVES INTERACT; ULTRASHORT

...

11/3,K/27 (Item 3 from file: 34)  
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci  
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01878512 Genuine Article#: JH794 No. References: 7  
Title: **INSTABILITY AND CHAOS IN A CO-2-LIKE LASER WITH INTRACAVITY PARAMETRIC AMPLIFICATION**  
Author(s): GUPTA SD; PANDE MB  
Corporate Source: UNIV HYDERABAD, SCH PHYS/HYDERABAD  
500134/ANDHRAPRADESH/INDIA/  
Journal: JOURNAL OF MODERN OPTICS, 1992, V39, N8 (AUG), P1643-1650  
Language: ENGLISH Document Type: ARTICLE (Abstract Available)

Title: **INSTABILITY AND CHAOS IN A CO-2-LIKE LASER WITH INTRACAVITY PARAMETRIC AMPLIFICATION**

...Abstract: modulated CO2-like laser system due to the presence of a parametric amplifier in the **laser** cavity are **investigated**. The equations of motion for the electric field and the population inversion are studied and...

...similar behaviour is observed in the Lorenz model with a parametric amplifier or with a **phase conjugate** mirror.

11/3,K/28 (Item 1 from file: 99)  
DIALOG(R)File 99:Wilson Appl. Sci & Tech Abs  
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1156528 H.W. WILSON RECORD NUMBER: BAST94025112  
Analysis of a ring-laser gyroscope with intracavity phase - conjugate coupling

Dennis, Michael L; Diels, Jean-Claude M  
Applied Optics v. 33 (Mar. 20 '94) p. 1659-72  
DOCUMENT TYPE: Feature Article ISSN: 0003-6935

Analysis of a ring-laser gyroscope with intracavity phase - conjugate coupling

ABSTRACT: The authors analytically and numerically **investigate** a ring-laser gyroscope in which the opposite modes are coupled by **intracavity** 4-wave mixing. It is demonstrated that cross-saturation-induced mode extinction is mitigated by...

...a bias beat frequency that can potentially be utilized as an all-optical dither. The **phase conjugation** is demonstrated to influence the lock-in



November 5, 2002

threshold in an indirect manner only. The results...